Enhancing Survivability An Air Force Perspective



aj Gen Gregory S. Martin trate of Operational Requirements S. Air and Space Operations

Air Force Perspective

USAF



- Eliminate enemy air defense systems
- Limit enemy engagement opportunities
- Self Protection

Offensive Posture Enhances Combat Effectiveness

Fundamental Lessons of Air Power

USAF



Air Superiority a Prerequisite for Success

"If I didn't have Air Supremacy, I wouldn't be here"

-- Gen Eisenhower at Normandy

Pivotal in 20th Century Warfighting

"Desert Storm taught us about air dominance. We had it, we liked it, and we're going to keep it"

-- Defense Secretary Perry

Fundamental Lessons Underscore Our Approach to Survivability
-- Freedom from Attack Allows Freedom to Attack

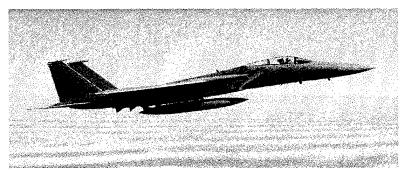
Past Experience has shaped our Investment Strategy

Dominant Air Interceptor and Air Superiority Fighters



F-14





F-15

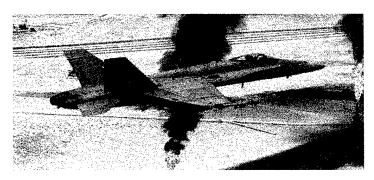
- Pulse Doppler Radars
- Radar Warning Receivers
- Electronic ID
- Highly Maneuverable
- Advanced Medium & Short Range A-A Weapons

Combined U.S. Kill Ratio of 38:0

... Affordable and Versatile Multi-Role Platforms ...







F-18

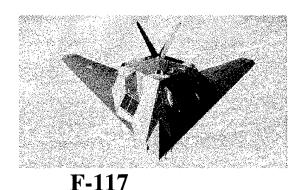
- SEAD and PGM capable
- Balanced Investment in Avionics, Agility and Weapons
- Large numbers to Paralyze Enemy with Effective High Tempo Ops

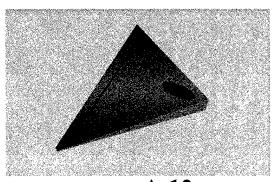
High Ops Tempo - - Constant Pressure - - Decisive Results

... High Leverage Platforms

USAF







A-12

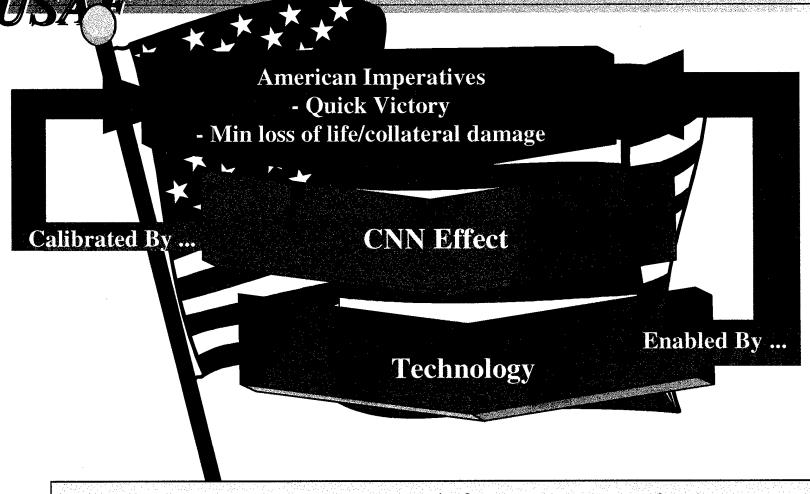
- Capitalized on Stealth and PGMs
- Quantum leaps in survivability and lethality

The New Calculus -- Not How Many Aircraft Per Target ...

But How Many Targets Per Aircraft

Our National Environment Demands

Continued Improvement in Effectiveness.



... Provides the Framework for JV2010 and Dictates Control of the Air as an Essential State

Air Dominance -- The Essential State



The Past



Now

brity Parity

Superior 1

Overage for

What is Air Dominance?

- Quick ...
 - Total ...
 - All-Weather ...
 - 24 hour a day...
 - ... Control of the Entire Battlespace

Air Dominance - The Key to Reducing Total Force Vulnerability

Enabling and Leveraging Air Dominance

USAF

American Imperatives

Quick Victory

-Rapidly mobile Air Powel

-Quick control of battlespace

-Precision firepower

-Asymmetric force

- Parallel Attack

Air Power Attributes

Enabling

Technologies

- Stealth
- Precision
- Fused Information
 - -Supportability

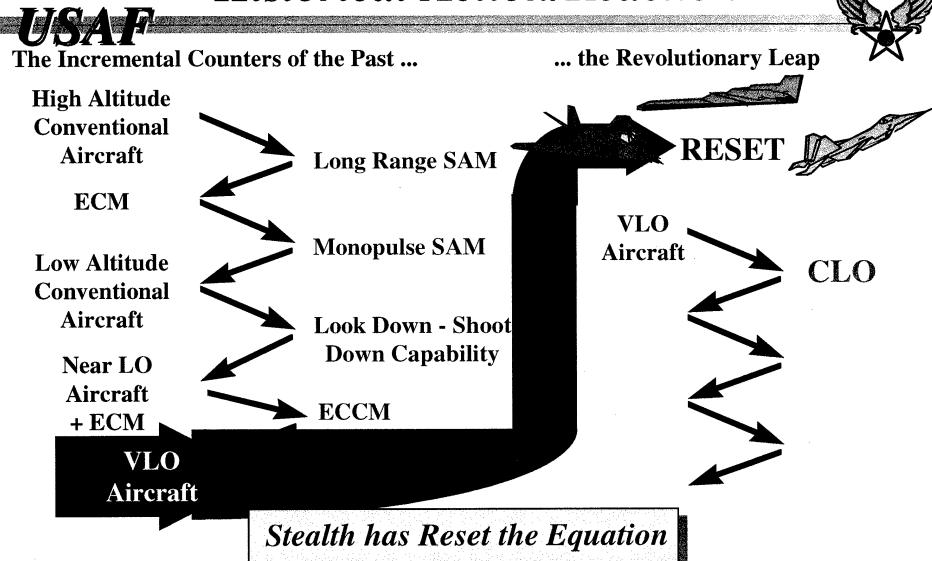
Minimal Casualties & Collateral Damage

-Security from enemy attack

-Precise munitions and effects

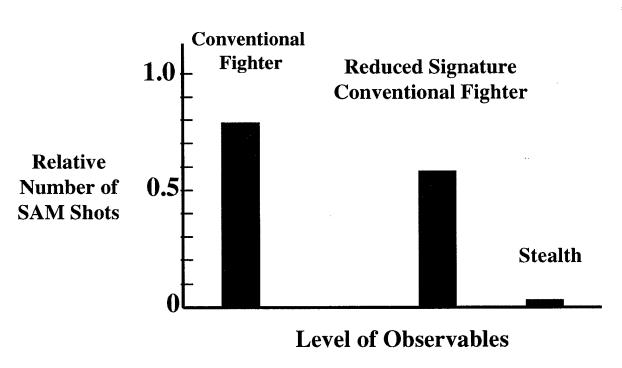
The Synergy of Enabling Technologies Provide the Best Path to Enhance Both Aircraft and Total Force Survivability

Stealth - A Revolutionary Counter to Historical Action/Reaction



Stealth's Contribution to Mission Effectiveness





Total SAMs

Launched

- Stealth prevents a majority of the enemy's shot opportunities
- Conventional fighters
 must try to survive first
- Fighters cannot be
 effective when they are
 fighting for survival

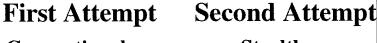
Stealth Provides an Effective, Survivable System

SAMs that Guide

To Target

Stealth -- Combat Proven

Baghdad Nuclear Research Facility



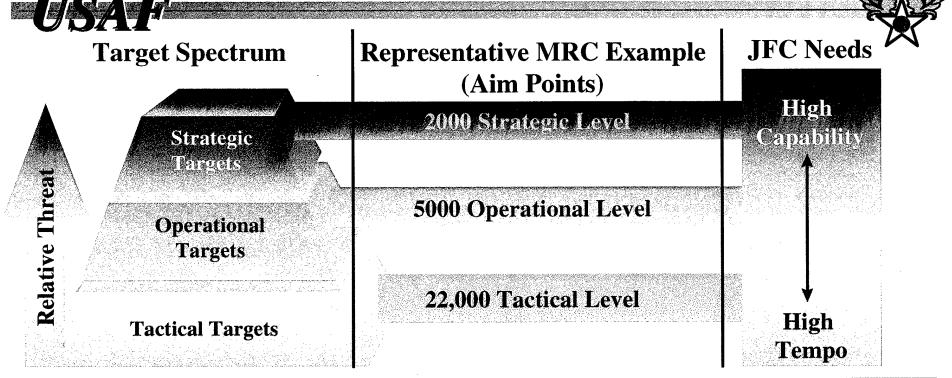
| Conventional | Stealth |
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| 75 Air | craft 10 |
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Leverage of Stealth

- 90% less aircrews at risk
 - Conventional package: 72-132
 - Stealth package: 8-16
- Value of assets at risk reduced by 74%
 - Conventional package: \$2,328M
 - Stealth Package: \$597M
- Time to initial capability cut in half/time to sustained capability cut by over 60%
 - Conventional package: 2.3 days to initial capability/5.2 days to sustained capability
 - Stealth package: 1.2 days to initial capability; 1.8 days to sustained capability

Stealth -- High Leverage Enabler for Most Challenging Targets -- Releases Bulk of Force for Other Priority Targets

Level of Stealth is Driven by Aircraft Mission and Situational Threat



Strategic Targets: Leadership, NCA C3, Production Facilities, NBC, Elec power, TBM, Strat Defense Operational Targets: Airfields/Shelters, Railroads/Bridges, Combat Support Nodes, Naval Ports, SAMs Tactical Targets: Tanks, APCs, Artillery, Aircraft/helos in open, Ships and Vessels

JFC Requires Balance of Dominant Capability and High Operations Tempo to Service the Full-Spectrum of Targets

Precision -- Redefining Effectiveness While Minimizing Risk

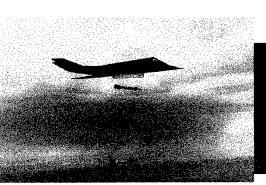
The Effort





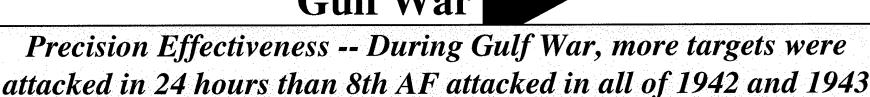
- Multi-Year Efforts
- Large Number of Casualties
- Mass Destruction and Collateral Damage





- Single Aircraft for Multiple Targets
- Maximum Effect with Minimal Collateral Damage at Risk











Information Fusion



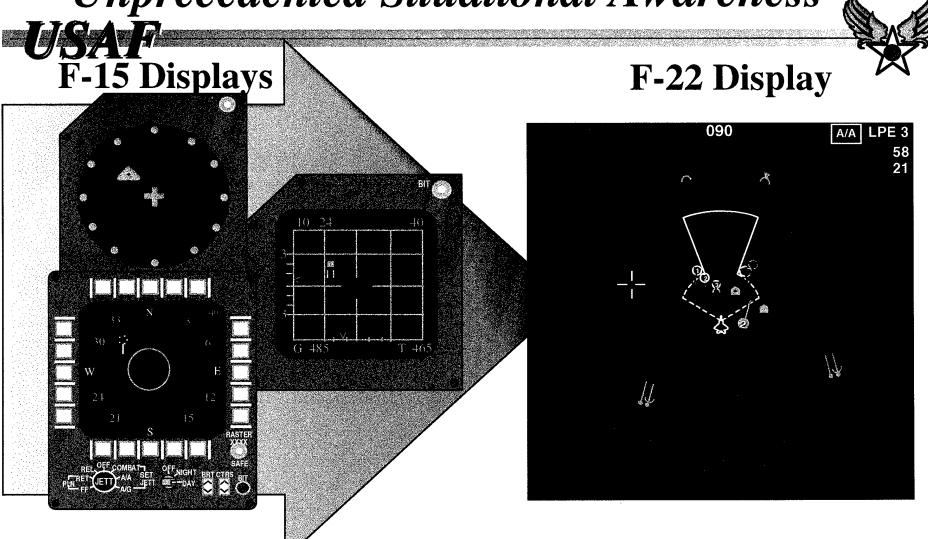


Goal: Turn the "Fog of War" Into a Transparent Battlespace for the Warfighter

- Enhancing Situational Awareness Critical to Improved Survivability
 - SA-enhancing Radar Warning Receivers enabled an 80% reduction in enemy SAM effectiveness in Vietnam
 - -- Allowed the effective employment of ECM/SEAD
 - Survival in air-to-air combat hinges on high situational awareness
 - -- 80-90% of all losses in air-to-air combat were unobserved attacks
- Information Critical for Mission Success
 - Nodal Targing enabled by near-real time information in Bosnia -- Directly Responsible for the Resumption of the Dayton Peace Talks

Fused Information provides a Transparent Battlespace -- Improves Situational Awareness and Enables Rapid Exploitation

Fused Information -- Delivering Unprecedented Situational Awareness



Pilot is Battle Manager vs Sensor Integrator

Fused Information -- Enabling Unprecedented Responsiveness

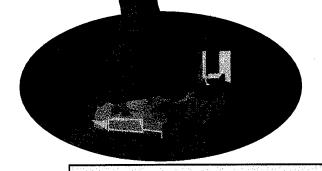


... and Near Real Time Information Transfer ...



... Coupled with aircraft capable of operating effectivel within the enemy's airspace ...





Result



Shooter

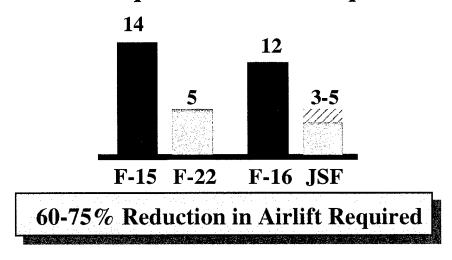
... Reduces Detection to Destruction from Hours to Minutes

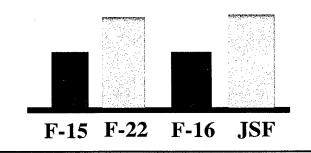
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Supportability - Rapid Response, Operations Tempo, and Risk

C-17s Required to Move a Squadron

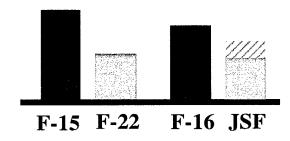
Relative Combat Sortie Rat





Approximately 50% Increase in Tempo

Support Personnel Required



Approximately 20 - 40% Less Warriors at Risk

The Synergy of Enabling Technologies Answers Challenges to JV2010

The Vision **Theater Ballistic Missiles Cruise Missiles Emerging Operational Concepts** Domenant Manager Precision Engagement Enabling Advanced Fighters **Technologies** Focused Logistics - Stealth Full-Dimensional Protection - Precision o-Air - Fused Information siles -Supportability

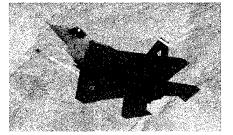
The Payoffs ...

The Challenges ...

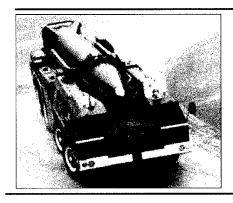
The Freedom From Attack . . .

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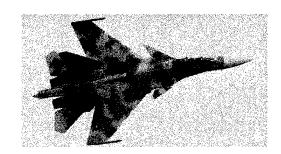
Compared to Legacy Force, our 21st Century Force ...



... Seizes Control of the Air in Less than Half the Time



- ... Reduces Unintercepted TBMs by 47%
 - -- Attack Operations and Airborne Laser more effective



... Reduces Enemy Offensive Sorties by 45%

... the Freedom To Attack ...

USAF

Compared to Legacy Force, our 21st Century Force ...



... Reduces Enemy Defensive Sorties by 48%



... Reduces Friendly Air Losses by 50%

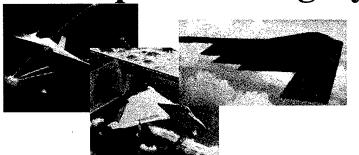


... Increases Friendly Kills of Enemy Equipment

... and Enables an Early Halt

USAF

Compared to Legacy Force, our 21st Century Force ...



... Halts Invasion in Half the Time



... Destroys 50% More Enemy Equipment



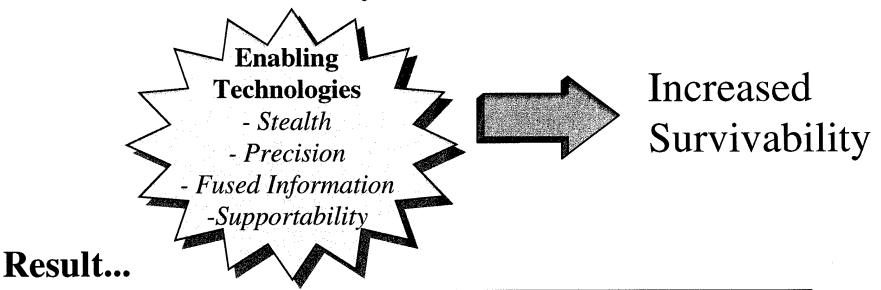
... Reduces Enemy WMD Facilities by an additional 76%

This Approach Reduces Total Force Risk

USAF



- The Operational Concepts of JV2010 depend on Air Dominance
- Air Dominance enabled by:



Rapid Response, Early Halt, and Decisive Victory With Minimal Loss of Life and Collateral Damage